

**FIVE-YEAR REVIEW REPORT**

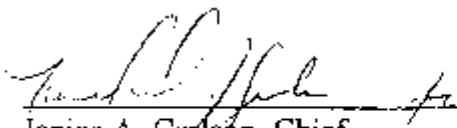
**BOWERS LANDFILL**

**CIRCLEVILLE, OHIO**

Prepared By:

Ohio Environmental Protection Agency

Columbus, Ohio

  
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Janice A. Carlson, Chief  
Division of Emergency and Remedial Response  
Ohio Environmental Protection Agency

7-23-17  
Date

## **I. INTRODUCTION**

### **A. Authority and Purpose**

The Ohio Environmental Protection Agency (OEPA) has conducted a Five-Year Review of the Remedial Action (RA) at Bowers Landfill, Circleville, Ohio. This review was intended to evaluate whether the RA remains protective of public health and the environment.

Section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 42 U.S.C. Section 9601 *et seq.*, as amended, and Section 300.430(f)(4)(ii) of the National Contingency Plan (NCP) require that periodic (no less often than each five years) reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use or unrestricted exposure following the completion of all remedial actions for the site. The purpose of such a review is to assess whether the remedial actions implemented continue to be protective of human health, and the environment. This review focuses on the protectiveness of the RA at Bowers Landfill (the site) five years from the time remedial action commenced.

U.S. EPA has established a three-tier approach to conducting Five-Year Reviews, the most basic of which provides a minimum protectiveness evaluation (Level I review). U.S. EPA contemplates that a Level I review will be appropriate in all but relatively few cases where site-specific circumstances suggest otherwise. A statutory Level I review was conducted for Bowers Landfill.

The Bowers Landfill RA was initiated in March 1992 and completed the following spring. The RA for Bowers Landfill is effective and protective of human health and the environment. The major component of the RA for the site was capping the landfill.

### **B. Site History**

Bowers Landfill is located in Pickaway County at the junction of Island Road and Circleville-Florence Chapel Road, 2.5 miles north of Circleville, Ohio (Figure 1). The site lies in a flood plain and is L-shaped with the ends abutting the Scioto River.

The landfill is approximately twelve acres in size, 3,500 feet long, about 125 feet wide and ten feet above grade. The current owner is the estate of Dr. John M. Bowers.

Bowers Landfill is located in a rural area. Fifteen houses are found within a half mile of the site and these homes depend on domestic water wells for drinking water. The wells have been sampled and no contamination has been found.

Bowers Landfill began operation in 1958 but information is limited as to the type and amount of wastes that were deposited in this location. However, an approximation was made that Bowers

contains 130,000 cubic yards of waste material (PRC, Preliminary, (30 percent) Design for Bowers Landfill, November 14, 1990).

The type of wastes disposed of at Bowers Landfill consisted mostly of residential waste collected by private haulers from the Circleville area. Beginning in 1963, the site received wastes from local industries. This continued until the landfill was closed in 1968.

Ground and surface water were first sampled in 1980. Three monitoring wells were installed at that time. Contamination by volatile organic compounds (VOCs) were detected in monitoring wells west of the landfill but not to the east. The VOCs detected were ethylbenzene, toluene and xylene.

Bowers Landfill was added to the National Priorities List (NPL) in September 1983. E.I. Du Pont de Nemours and Company (Du Pont) and PPG Industries, Inc. (PPG) were named as the Potentially Responsible Parties (PRPs) for Bowers Landfill. The PRPs signed a consent order with Ohio EPA and U.S. EPA to conduct a remedial investigation/feasibility study (RI/FS). This was conducted from 1985 to 1989.

As part of the RI/FS, twenty additional monitoring wells were installed.

The Record of Decision (ROD) was signed on March 31, 1989. The remedy selected was capping, with gas and ground water monitoring to be conducted subsequent to capping.

The remedial design (RD)/remedial action (RA) was conducted by U.S. EPA's contractor PRC. Work for the RD began in 1990 and was completed the following year. The RA commenced in February 1992 and was completed the following spring.

## **II. DISCUSSION**

### **A. Remedial Objectives**

The principal objective of the RA was to reduce the infiltration of precipitation into the landfill by installing a low-permeability clay cover on the landfill. The RA for the site included removing surface debris and vegetation from the landfill, installing a low-permeability clay cover on the landfill, constructing erosion control measures and drainage improvements, restricting site access and use, maintaining the clay cover after construction, monitoring ground water and surface water and installing a gas venting system.

Two pre-design field investigations were conducted - a geotechnical investigation to evaluate the properties of potential cover materials and a soil gas study to determine whether a gas venting system should be constructed.

The first investigation determined that the material in the field west of the landfill was acceptable

for usage as the clay layer. The excavation pits were converted to a wetlands. This area is in the Scioto River flood plain and is frequently inundated with flood waters.

The soil gas survey indicated that a gas collection and venting system was needed as part of the landfill cover. Both methane and VOCs were detected.

During August 1990, ground and surface water sampling was conducted to determine if any changes had occurred subsequent to the last sampling event. The sampling results were helpful in determining the monitoring wells to use in the long term operation and maintenance (O&M) program.

## **B. Remedial Action**

The following paragraphs highlight the actions taken to complete the requirements of the ROD.

Trees, brush, weeds and exposed/surface debris were removed. Most of the vegetation was burned. Old tires and appliances were decontaminated, removed from the site and properly disposed of off site. Landfilled material was kept on site and placed so that it did not interfere with the capping process.

During the RA, eight additional monitoring wells were installed. Five of these wells were placed in the area west of the landfill. The remaining three were installed off site on the west side of Island Road about 1500 feet south of the site. In addition, many of the established monitoring wells had risers attached and the areas around them mounded to make access easy during flood events.

The gas venting system was installed in the graded layer, with the gravel layer placed around the header. Gases generated rise through the graded layer and are vented into the atmosphere.

The cover system included the following from bottom to top - graded and gas venting layer one foot thick, low permeability clay cover 2.5 feet thick, topsoil cover 3 feet thick and the vegetative cover 6 inches thick.

The erosion protection and drainage improvements were accomplished by stabilizing the slopes/promoting drainage, installing sheet piling at the ends of the landfill abutting the Scioto River, planting grass on the top and sides of the landfill, reducing the infiltration of surface water through the capping process and reconfiguring the ditch system.

Institutional controls were initiated for the landfill. These included deed restrictions and permanent easements, agricultural use restrictions and site access restrictions.

### **III. POST RESPONSE ACTION ACTIVITIES**

The first year of O&M was overseen/conducted by U.S. EPA. The PRPs agreed to do the ground water monitoring for the first year, with U.S. EPA's contractor, PRC, responsible for conducting the remaining tasks.

The specific tasks that were listed for the 30 years of operation and maintenance are as follows: 1) gas monitoring, 2) ground and surface water monitoring, 3) maintenance of the landfill cap, 4) site inspections, and 5) repairs.

Beginning with the second year of O&M, the PRPs signed a consent decree with the State of Ohio in September 1996 to do all post-construction activities at the site. Early in the second year, the PRPs' contractor abandoned Monitoring Well P15-B. A bailer was caught at the bottom of the well. This well was replaced by Monitoring Well P15-BR.

Ground water sampling has been conducted on a quarterly basis. Gas monitoring has been done on a quarterly basis for methane and on a semi-annual basis for VOCs. Surface water is sampled a minimum of twice a year in the southern end of the ditch and once per year in each of the two wetlands ponds.

### **IV. SCOPE AND NATURE OF THE FIVE-YEAR REVIEW**

The U.S. EPA guidance for Five-Year Reviews contemplates three levels of review. Level I is the lowest level of evaluation of protectiveness, Level II is the intermediate level, and Level III is the highest level. Levels II and III were not considered for this Five-Year Review, because the RA remains in place and is operating and functioning as designed, hazardous substance concentrations have decreased, institutional controls are in place and are protective.

Bowers Landfill was visited twice in May 1997 by the Ohio EPA Site Coordinator (SC) and once by the U.S. EPA Remedial Project Manager (RPM). The purpose of these visits was to determine the current status of the site and the adequacy of the construction. Pictures were taken during the site visits and are in the Ohio EPA, Division of Emergency and Remedial Response file.

In addition to the site visits, the following documents were reviewed:

- The Preliminary Design Report;
- The Record of Decision (ROD);
- The Year One and Years 2-30 Operation and Maintenance Work Plans; and
- U.S. EPA guidance for conducting Five-Year Reviews and examples of Five-Year Review Reports.

## **V. RESULTS AND RECOMMENDATIONS FROM THE FIVE-YEAR REVIEW**

During the May 1997 site visits, the SC and RPM made the following observations relating to the current status of the site and the continued protectiveness of the response actions:

- The soil and vegetative cover was intact and in good condition. Bare patches that were noted last fall have been reseeded and new growth is evident;
- The access road and culvert are in good condition. The culvert is free of any debris;
- The gate and fencing around the site were intact except for some barbed wire at one location at the bottom of the fence along Island Road. All of the signs attached to the fencing were in good condition. Two signs on the north end of the landfill were no longer in place. One sign was completely gone and the other was lying on the ground;
- The monitoring wells are in good condition. Several of the well pads were recently repacked underneath with soil and reseeded on the exposed surfaces. Animals have been burrowing under the well pads. This may be an ongoing problem. Some of the monitoring wells need to have their tags replaced;
- The gas vents are in good condition;
- A minor amount of trespassing was noted. Dirt bike tracks crossed the inlet for the south pond and in the east ditch north and south of the culvert. No damage to the site was noted; and,
- No damage of the sheet piling was noted at either end of the landfill.

The PRPs were notified of the above minor deficiencies.

During the May 1997 site visits, Monitoring Well W-9 was abandoned. The well was frequently flooded and was no longer needed for ground water monitoring.

Ground and surface water quality has not been diminished. No VOCs or semi-volatile organic compounds (SVOCs) have been detected in the first three sampling events of the second year of ground water sampling. Barium continues to be detected in Monitoring Well P-5B, and sometimes is above the MCL (maximum contaminant level). Nine down-gradient monitoring wells contain one or more metals that are statistically significant.

Analytical data has been entered into the GRITS/STAT computer program and a statistical analysis was completed using a non-parametric analysis of variance (ANOVA) using the Kruskal-Wallis Test. Results from up-gradient monitoring wells are compared to the results in down-gradient monitoring wells to determine which down-gradient wells show evidence of statistically significant levels of analytes.

The results of the comparison at Bowers Landfill indicated that several inorganic parameters are reported by GRITS/STAT as being statistically elevated with respect to background. Most of these parameters do not have primary MCLs. Barium has exceeded its MCL during some sampling events.

The nine monitoring wells with statistically significant sampling results have had comparable results in the past. No action is needed because no apparent risk exists.

There have been no significant surface water detections.

## **VI. STATEMENT OF PROTECTIVENESS**

I certify that the remedies selected for this site remain protective of human health and the environment.

## **VII. NEXT FIVE-YEAR REVIEW**

The next five-year review will be completed by September 4, 2001, which is five years from the date that the original review should have been conducted.

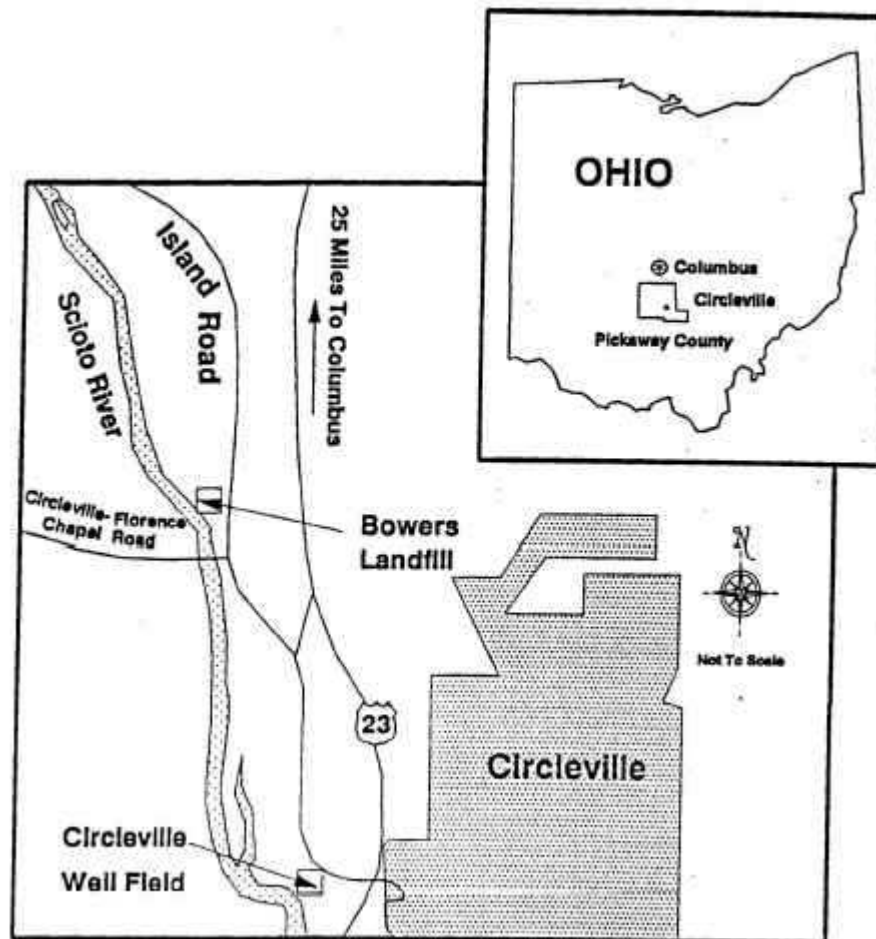


Figure 1: Site Location Map



Approvals	Approved By	Date
Jan Carlson, Chief, DERR	<u>Jan Carlson</u>	<u>7.23.97</u>
Mike Czezele, Assistant Chief, DERR	<u>Mike Czezele</u>	<u>7.23.97</u>
Ray Beaumier, Manager, DERR	<u>Raymond A. Beaumier</u>	<u>7/18/97</u>
Deborah Strayton, Supervisor, CDO, DERR	<u>Deborah Strayton</u>	<u>7/17/97</u>
Diana Bynum, Site Coordinator, CDO, DERR	<u>Diana L. Bynum</u>	<u>7.17.97</u>

# Inter-Office Communication

**TO:** Mike Czezle and Jan Carlson

**DATE:** 7/18/97

**FROM:** <sup>R+B</sup>  
Ray Beaumier, Manager, TPSS, DERR

**SUBJECT:** Bowers Landfill 5 Year Review

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Diana Bynum, CDO has completed the Bowers Landfill 5 year review as a State-lead activity in consultation with the Regional RPM. US EPA 5 Year Review guidance discusses three potential levels of review (Level I, II, and III ) with level II and III only being used where significant problems or changes in the effectiveness of the remedy have occurred. Bowers Landfill clearly fits into the level I category of reviews.

The Bowers Landfill remedy (capping) is operating as planned, is protective of human health and the environment with only minor issues (two signs removed at the north end, small area where barbed wire was missing at the bottom of the fence) which were pointed out to the PRPs who are responsible for O&M. The standard format was followed and the RPM has been in the loop on the review of this document.

No standard protocol exists for sign off/transmittal to US EPA. I felt our standard signatory process should be used and the document could be signed off on by the Chief of DERR.

The next step is that Region V has begun the process for deletion of Bowers Landfill from the NPL. Part of the process requires state concurrence. CDO personnel, Bill Fishbien, Heidi Sorin and I concur with the recommended deletion. This would be the first deletion of an Ohio site from the NPL that I am aware of. Bill Fishbien, Legal has developed a deletion package for the director's signature. The deletion package will include this 5 year review.

Let me know if you have any questions or would like to modify the review/signatory process.

# Ohio EPA

## Central District Office

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3232 Alum Creek Drive \* Columbus, Ohio 43207-3417 \* 614-728-3778

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### ***INTEROFFICE MEMORANDUM***

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**TO:** Jan Carlson, Chief, DERR, CO  
Ray Beaumier, Manager, TPSS, DERR-CO

**FROM:**  Diana Bynum through  Debbie Strayton, DERR, CDO

**DATE:** July 14, 1997

**SUBJECT:** Five-Year Review Report  
Bowers Landfill  
Pickaway County  
MSL # 165-0106

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Attached is the Five-Year Review Report for Bowers Landfill located on Island Road, Circleville, Ohio. We ask for your signatures. This report was completed as part of a grant with U.S. EPA Region V.

Your prompt action on this matter is greatly appreciated.

# Ohio EPA

## COVER MEMO

**SUBJECT:** Five-Year Review Report -- Bowers Landfill, Island Road, Circleville, Ohio --  
MSL I.D. #165-0106, Pickaway County.

**Prepared By:** Diana L. Bynum, CDO, DERR

**DATE:** July 14, 1997

**FINAL DOCUMENT FOR SIGNATURES** (Five-Year Review Report, Page 8 -  
Signature Page)

### Necessary Approvals

### Approved By

### Date

Jan Carlson , Chief, DERR

Jan Carlson for 7.23.97

Mike Czezele, Assistant Chief, DERR

Mike Czezele 7.23.97

Ray Beaumier, Manager, DERR

Raymond A. Beaumier 7/18/97

Deborah Strayton, Supervisor, CDO, DERR

Deborah Strayton 7/17/97

Diana Bynum, Site Coordinator, CDO, DERR

Diana L. Bynum 7.17.97

**RETURN ALL SUPPORTING DOCUMENTS TO :** **Diana Bynum, CDO, DERR**  
(Phone: 614-728-3826)



State of Ohio Environmental Protection Agency

**STREET ADDRESS:**

1800 WaterMark Drive  
Columbus, OH 43215-1099

**TELE:** (614) 644-3020 **FAX:** (614) 644-2329

**MAILING ADDRESS:**

P.O. Box 1049  
Columbus, OH 43216-1049

July 21, 1997

Mr. William Muno  
U.S. EPA, Region V  
77 W. Jackson Blvd.  
Chicago, Illinois 60604

Dear Mr. Muno:

Re: Bowers Landfill  
Pickaway County  
OHD980509616  
Ohio EPA #165-0106  
Five-Year Review

Ohio EPA has completed the Five-Year Review Report for Bowers Landfill, Island Road, Circleville, Ohio. This report was part of our grant commitment for the current federal fiscal year and is hereby forwarded to you with this letter.

If you have any questions, you may call the site coordinator, Diana Bynum, at (614) 728-3826.

Sincerely,

A handwritten signature in black ink, appearing to read "Janice A. Carlson".

Janice A. Carlson  
Chief  
Division of Emergency and Remedial Response  
Ohio Environmental Protection Agency

cc: David Wilson, USEPA, Reg. V  
Rosita Clarke, USEPA, Reg. V  
Bill Fischbein, Legal  
Karen Bryant, PIC/CO  
File, DERR/CO  
File, DERR/CDO